

Subject: MSD Colloquium, Thurs, 12/14, 11am, 212, A-157
From: Janice Coble <coble@msd.anl.gov>
Date: Mon, 27 Nov 2006 10:31:01 -0600
To: msd@anl.gov

SPEAKER: DR. GIAN FELCHER
Argonne National Laboratory

TITLE: "Expanding Neutron Research:
Structure/Properties of Organic
Membranes"

DATE: Thursday, December 14, 2006

TIME: 11:00 a.m.

PLACE: Building 212, Room A157

HOST: Maria Iavarone

Refreshments will be available at 10:45 a.m.

Abstract: Analysis of the structural properties of biological, organic, synthetic membranes can be well handled by neutron scattering, provided that the neutron flux is adequate. Spin-echo encoding of the neutron momentum transfer allows to probe large length scale structures without the need of a tight beam collimation and resulting intensity loss. This concept has recently been successfully implemented at the Institut Laue-Langevin in Grenoble, by equipping a reflectometer with neutron resonance spin echo circuits to make it suitable for small angle scattering experiments at grazing incidence. Crucial tests were made on assemblies of polystyrene droplets, just a few nanometers thick, dewetted from a silicon surface. The tests determined not only the characteristic droplet-droplet distance but also indicated the onset of microphase separation of copolymers within the individual droplets. The procedures developed in the course of the experiments are now guiding the design of an instrument at the Spallation Neutron Source, with the general purpose of studying near surface membranes with planar structures having characteristic lengths ranging from 5 to 5,000 nanometers.